Remarks

Claims 53-79 are currently pending. Claim 64 has been amended to broaden its scope and dependent claims 80 and 81 have been added. While Applicants appreciate that the Examiner has deemed claim 65 to contain allowable subject matter, Applicants assert that all claims are in condition for allowance as set forth more fully below.

Interview Summary

The undersigned participated in a telephone interview with the Examiner on October 26, 2004. During the interview, deficiencies in the Reipur reference were discussed. Namely it was discussed how Reipur has been utilized throughout the Office Action as allegedly disclosing a voltage converter that supplies a voltage to the secondary battery according to instruction from a supervisory circuit. However, it was further discussed that Reipur regulates current based on a battery voltage measurement and does not include a voltage converter that provides voltage to the battery based on an instruction from a supervisory circuit associated with a voltage requirement of the battery. The Examiner requested that such arguments be submitted in writing.

102 Rejections

Claims 53-57, 75 and 76 stand rejected under 35 USC 102(e) as being anticipated by Reipur (US Pat App 2001/0000212). Applicants respectfully traverse these rejections.

The Office Action rejects independent claims 53 and 74 by stating that Reipur teaches all of the elements. The Office Action equates units 3 (a current regulator), 8 (a control circuit), 7 (a processor), and 9 (an analog to digital converter) of FIG. 5 of Reipur to the supervisory circuit of claim 53. The Office Action further equates unit 9 (the analog to digital converter) to the voltage converter of claim 53. However, it should be noted that Reipur discloses utilizing the A/D converter 9, processor 7, and control circuit 8 to measure the voltage of the battery under charge and determine the proper charging current to supply to the battery terminals 4 and 5 via current regulator 3. Thus, Reipur is not concerned with instructing a voltage converter to output a voltage that is a required voltage for a battery and that is associated with or determined by supervisory circuitry. Instead, Reipur relies on the fixed voltage being output from the rectifier 2 being the

proper voltage to supply to the current regulator, and then utilizes the current regulator to control the current to the battery.

Claim 53 recites that the voltage converter is in communication with the supervisory circuit, wherein when the secondary battery is in contact with the supervisory circuit, and the supervisory circuit instructs the voltage converter to supply a voltage to the secondary battery in accordance with the voltage requirement. Thus, the voltage converter gets an instruction from the supervisory circuit and the voltage converter supplies a voltage to the secondary battery, i.e., the required voltage, based on the instruction. These recitations of claim 53 are contrary to Reipur.

Claim 75 recites instructing the voltage converter to receive power from a power source, to convert the power to meet the voltage requirement, and to supply the converted power to the secondary battery. Thus, the voltage converter of claim 74 also receives an instruction regarding the voltage requirement to be supplied. The recitations of claim 74 are also contrary to Reipur.

In Reipur, the A/D converter 9 takes a sample of the analog battery voltage and converts it into a digital value for use by the processor 7 when controlling charging current. The A/D converter 9 does not supply voltage to the battery through terminals 4 and 5 and cannot be equated to the voltage converter of claim 53 for this reason. Furthermore, the A/D converter 9 does not receive any instruction from either the processor 7 or control circuit 8 that causes the A/D converter 9 to supply any voltage and therefore, cannot be equated to the voltage converter of claim 53 for this additional reason. Furthermore, as noted above, Reipur relies on the fixed output voltage of the rectifier 2 in combination with the control of current through current regulator 3 for the proper charging of the battery. Accordingly, for at least these reasons, claims 53 and 75 are allowable over Reipur.

Dependent claims 54-65 and 76-79 depend from allowable claims 53 and 75 and are also allowable for at least the same reasons.

103 Rejections

Claims 58-64 stand rejected under 35 USC 103(a) as being unpatentable over Reipur in view of Goldman (US Pat 5,121,044). Claims 66-68 and 77-79 stand rejected

under 35 USC 103(a) as being unpatentable over Reipur in view of McClure (US Pat 5,198,743). Claims 69-74 stand rejected under 35 USC 103(a) as being unpatentable over Reipur in view of in view of McClure (US Pat 5,198,743) and further in view of Goldman(US Pat 5,121,044) Applicants respectfully traverse these rejections.

Claims 66-74

The Office Action rejected claim 66 by stating that Reipur discloses all of the elements except for a programming resistor. Claim 66 has been broadened by amendments herein to remove the programming resistor recitation, which has now been included in dependent claim 80. However, claim 66 does recite that the supervisory circuit determines a voltage requirement of the secondary battery and instructs the voltage converter to supply a voltage to the secondary battery in accordance with the voltage requirement. Therefore, Reipur fails to teach the elements of claim 66 for the same reasons specified above relative to claims 53 and 75.

Additionally, the other cited references also fail to account for the deficiencies of Reipur. Much like Reipur, McClure discloses controlling current to the battery based on the measured voltage of the battery so as to properly peak charge the battery. A rectifier outputs a voltage to a power transistor switch that responds to a signal to control current to the battery. McClure fails to teach that a supervisory circuit determines a voltage requirement and instructs a voltage converter to supply a voltage in accordance with the voltage requirement but simply relies on the voltage output from a rectifier, as in Reipur. McClure is focused on detecting when to stop current being provided to the battery so as to avoid undercharging or overcharging of the battery, but there is no determination of required charging voltage with an instruction to provide the same from a voltage converter. Goldman includes a charge control unit 42 but does not provide any disclosure as to its operation, and certainly does not disclose a supervisory circuit instructing a voltage converter to supply a particular voltage.

For at least these reasons, claim 66 is allowable over the cited references. Dependent claims 67-74, 80 and 81 depend from an allowable claim 66 and are also allowable for at least the same reasons.

Other claims

As noted above for the 102 rejections, the claims in addition to claims 66-74 that have been rejected under 35 USC 103 depend from either allowable base claim 53 or 75 and are also allowable over the cited references for at least the same reasons.

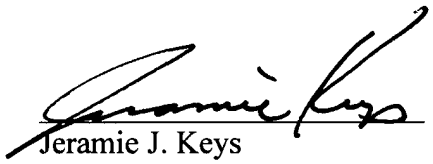
Conclusion

Applicants assert that the application including claims 53-81 is now in condition for allowance. Applicants request reconsideration in view of the amendments and remarks above and further request that a Notice of Allowability be provided. Should the Examiner have any questions, please contact the undersigned.

No fees beyond the fee for two new claims are believed due. However, please charge any additional fees or credit any overpayment to Deposit Account No. 50-3025.

Respectfully submitted,

Date: November 2, 2004



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